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LEAD POISONING.[1]

BY M. H. RICHARDSON, M. D.

In this paper I wish to call attention to the deleterious effects of common white lead on men engaged in its manufacture, and briefly to consider one or two questions which have arisen concerning chronic lead poisoning since my entrance into the school. The mills, which through the kindness of Mr. Batchelder and Mr. Chase, of Salem, I was enabled to visit and very carefully to examine in every part, are two of the largest in New England. The metal first comes in contact with the skin of the men in being carried by hand from the cars to the melting room. Here many tons are melted at once and cast into thin, circular, perforated plates called buckles, of such shape as to expose as much surface as possible for the weight. The temperature is very high. Bathed in perspiration the men stand for hours inhaling the minute particles of the oxide of lead which escape from the cooling buckles and fill the air. Their thirst in this part of the process is insatiable, and enormous quantities of ice-water are swallowed, whereby the dust, which adheres to the tongue and lips, is washed directly into the stomach.

Having been carried to a neighboring shed, the buckles are placed over pyroligneous acid in earthen pots of about four quarts capacity. Many thousand of these pots are packed together in the refuse of stables or the exhausted bark from tanneries, and are exposed to the moderate heat which is spontaneously generated about them. The wood vinegar is volatilized and rises through the buckles, changing by some obscure chemical reaction the blue metallic lead into the white carbonate. After an exposure of this sort, lasting from six weeks to three months, the pots are unpacked and the whitened lead removed. Here for hours men breathe the vapors rising from the heated bark, loaded with poisonous particles of the now dusty metal. In English mills this part of the process is done by women, with most disastrous effects upon the health. To separate the blue from the white lead the buckles are placed in a revolving cylinder of wire cloth, through which the carbonate, more or

[1] Graduation Thesis, Harvard Medical School.

less pulverized, falls. The blue portion remains in the cylinder and is melted again. To be in this room without protection is suicidal, for the air is filled with visible clouds of dust. The utmost care must be taken. The mouth and nostrils are covered by a moist sponge to catch the floating particles. The skin and clothes quickly become white with lead. The semi-powdered metal, having been shoveled into barrels and rolled into another division of the works, is mixed with water and finely ground. When it fills the water as a milky precipitate, the whole is drawn off and dried on long tables at a temperature of 140 F. Formerly the grinding was done without water, and the lead sickness was much more common than now. The drying room is the most poisonous one in modern mills. It combines the effects of the dust which fills the air with those of a heated atmosphere. Here, as in the melting room, the skin is kept in the best state for absorption. A terrible thirst makes the men swallow large quantities of cold water with the lead which accumulates on their lips and tongues, while at every breath fine dust is drawn into the lungs.

The general appearance of the men is not good. The faces are sallow and more or less worn. The sclerotic coat is yellowish. Their motions are far from energetic, and in some cases eccentric and unsteady. One would say immediately, I think, that the general appearance is much below that of the average workman.

(1.) The first man examined has worked in all parts of the mill for thirteen years. His only trouble is rheumatism. The gums show a distinct blue line along the border.

(2.) After seven years in the corroding rooms has no symptoms excepting the blue line.

(3.) After grinding lead with oil has only the blue line.

(4.) After working in all parts of the mill for six months has had violent colic and great constipation. Blue line marked.

(5.) Reports only blue line after four years' work.

(6.) The machinist, after repairing in the drying room a few hours a day for ten days, was affected with colic and constipation. Has great habitual constipation. Blue line very marked.

(7.) After seven years only blue line.

(8.) After twelve years has only blue line and fungous, bleeding gums, with occasional colic and obstinate constipation.

(9.) After six years in corroding room has only blue line.

(10.) Has worked in all parts of the mill for fifteen years without showing a trace of blue line or any other symptom whatever. Very neat.

(11.) After three years only blue line.

(12.) After four years, nothing.

(13.) Blue line, rheumatic pains, and fainting fits. This was a remarkably neat man.

(14.) After four years no trace of poisoning.

(15.) After four years entirely used up. Had to leave all work.

(16.) After one year's work completely crippled, having paralysis of the extensors, aphonia, and general debility.

(17.) The carpenter, after repairing ten days in the drying room, had severe colic, obstinate constipation, and persistent blue line.

(18–75.) Of the rest of the seventy-five men whom I examined all had a distinct blue line about the gums, and, with one or two exceptions, habitual constipation. There was nothing further than this to suggest the presence of lead.

In addition to the above cases, three of the former employés had suffered with difficulty in speaking, three with amaurosis, several with cerebral troubles, and many with paralysis. The superintendent has observed that the most frequent complaint has been of swollen joints and aching bones. In the numerous cases of paralysis which he has seen during many years' service at these works, he has noticed that the wrists have become much swollen before paralysis of the extensors. A curious tradition exists among them that they cannot drink alcoholic liquors and keep up with their work, like laboring men in other manufactories. Several cases were told me of men who quickly succumbed to the influence of the lead after beginning the use of strong stimulants.

The length of time that one can work surrounded by these poisonous exhalations is subject to immense variations. Some men have become paralyzed in less than a month; others exist for years. One man has outworked twenty others. As an illustration of this fact, and as a typical case of chronic lead poisoning, I will give in more or less detail the history of a case that is famous among the Salem lead workers, that of a man who for twenty-five years has been in the worst position the mill affords, — that of shoveling the dry, powdered lead, — and has seen forty-seven men leave the mills to die from the direct influence of the poison.

D. A., aged forty-two, born in Ireland, is the father of a fine large family, and a man of very temperate habits. He has worked twenty-five years shoveling dried carbonate of lead from barrels into the grinders. For twenty-five years he has been white with the clouds of dust in which he has worked. He is a man of very filthy appearance. His first symptoms came on two years ago. Up to that time he had owned cows, and had had an abundance of milk to drink. He sold his cows and left off drinking milk. Then his troubles began. Digestive difficulties arose, accompanied by obstinate constipation, and followed by colic.[1] Since that time he has been adding to his ailments, till now his case is as follows: —

[1] He had no dejection for twenty-nine days.

Face haggard, skin yellow, sclerotic coat of a yellowish tinge. Gums show a very marked blue line, with the interdental processes much shrunken. Hands and feet very cold, but not anæsthetic. They have been so for years. Skin all over the body of a peculiar, dead, waxy hue, known among workmen as the lead skin. Feet and legs considerably swollen. Has intense pain in great toe at night, which nothing relieves. Arms very much wasted. Wrists much swollen, while extensors of hand are completely paralyzed. Supinators intact. His gait is unsteady. His hands tremble violently when he tries to take his shovel. Yet he manages to shovel six tons of lead daily.[1]

By recapitulating we find (1) that all the men examined have sallow complexions and discolored sclerotics. (2.) All but three show blue line. (3.) There is more or less constipation and digestive disturbance. (4.) Colic in several cases. (5.) Paralysis in several cases. (6.) Amaurosis in several cases. (7.) Cerebral trouble in one case (fainting fits).

According to the authorities these symptoms occur in chronic lead poisoning. We should not, however, expect to find in the mills any severe cases, for after the appearance of the graver symptoms all connection with the mill ceases. We have, then, only the milder cases of chronic lead poisoning to consider. I wish now to discuss briefly two or three of the more common signs by which lead manifests its presence in the body; then, having decided that lead is present, to find out how it got in, how to prevent more from getting in, and, finally, to remove that which is already there.

The common signs of chronic lead poisoning are (1) blue line, (2) colic, (3) paralysis.

The blue line — le liséré de Burton, from Burton, who first described it in 1840 — is not a constant symptom, being caused, according to Tanquerel, by the action of sulphureted hydrogen from the decomposition of food around the teeth. We should not expect to find it on the gums of those who keep their teeth clean. In the cases given one man had worked fifteen years without having it. It was remarked of this case that the person was unusually neat. In the other cases given, where no blue line existed, the teeth were very clean. On the other hand, one case was found where, though the man was scrupulously neat in every way, there was discoloration. That the line is caused by the action of sulphureted hydrogen is shown by an experiment of Tanquerel, who digested in sulphureted hydrogen water the clean gums of a man dead with lead poisoning, thereby producing a blue line. To add evidence in regard to this point I tried a somewhat similar experiment. A strong,

[1] Urine peculiar in appearance. Light colored. Specific gravity low. No albumen. Abundant sediment of amorphous urates. No casts. Very small amount of lead was obtained by analysis, which was not weighed.

healthy cat was fed for a week upon milk to which had been added a small portion of a solution of plumbic acetate. At the end of a week the animal was killed, after having shown symptoms of severe constitutional disturbance. The lower jaw was excised, and the gums found perfectly clean. The upper jaw was also clean. The lower jaw was placed in water through which a stream of sulphureted hydrogen was passed for several hours. At the end of that time a perfectly distinct and unmistakable blue line was found throughout the juncture of the gum with the teeth. The stomach and intestines of the animal showed nothing remarkable. The presence of the blue line seems, therefore, to depend on a certain amount of putrefaction about the teeth. Tardieu cites the experiments of M. Gréhant to show that the blue substance is sulphide of lead. Dr. Burton noticed that after giving a salt of lead as a medicine the blue line appeared in less than twenty hours, and that having once appeared it was very persistent. Taylor gives a case where it remained years after the ingestion of the poison. Its absence, however, as we have seen in the cases given, is not proof that there is no lead in the body. Though the blue line appears from poisoning by the salts of mercury the difference is very easily seen, for in poisoning by mercury there is pain, heat, redness, and tumescence, with increased flow of saliva and looseness of teeth. The lead line has been obliterated by the use of calomel.

Colic. — The cause of this painful symptom is variously given. Indirectly, according to Tanquerel, the contact of the lead with the mucous membrane or with any abraded surface will produce it. That it may be caused by direct contact with the intestinal walls is undoubted. Moreover, the experiments of Schlöpfer, who injected the acetate of lead into the trachea of a dog, producing colic, prove that it can be caused by absorption through the pulmonary mucous membrane. Tanquerel gives cases where colic has been caused by absorption from the eyes, skin, and vagina. On the other hand he was unable to produce it by the application of mercurial ointment to the unabraded skin of a dog. But cases are given in the *Journal de Médecine* where colic has followed the use of cosmetics. It is certain, however, in the case of these workmen, that the lead has a chance to act in all the above-mentioned ways, — being breathed into the lungs continually, taken into the stomach at every swallow, and absorbed uninterruptedly by the exposed surfaces.

When we inquire what is the direct cause of the pain we are still more in doubt. According to some it is an affection of the muscular coverings of the abdomen; others say of the colon. Dr. Eulenberg, of Berlin, describes it as "neuralgia mesenterica characterized by spontaneous paroxysmal pains occurring in the mesogastric region." It is due, he says, to spasmodic contractions of the intestinal walls from the

peculiar effects which lead has on the vaso-motor system, that, namely, of producing contractions of the involuntary muscular fibre. Being deposited in the walls of the intestines it produces spasmodic contractions. M. Potain, in the *Journal de Médecine*, who, by the way, asserts that the colic follows intestinal absorption only, adds that the pain may be augmented by the presence of hardened masses in the intestines. He does not explain, however, that these "colicky" pains are relieved by pressure, the weight of two or three persons, according to Christison, sometimes giving relief, a thing one would hardly expect were M. Potain correct, for pressure must increase the irritation caused by the fæces. It is believed by some writers to be a neuralgia of the mesenteric plexus, just asangin apectoris is or has been believed to be a neuralgia of the cardiac plexus.

Paralysis of the extensor muscles of the hand usually follows colic. It is preceded and accompanied by a tremor and twitching of the muscles, as we have seen in some of the workmen examined. It well illustrates the effect of lead on the nervous system. Dr. Hollis says that the muscles implicated, supplied by the weakened nerves, are not equally disturbed, but that "the peripheral ultra-muscular elements may be affected, while those closely adjoining may not. If certain fibres of a muscle are weakened by loss of nervous power, an uncertain intermittent contraction of the enfeebled fibres will in all probability replace that sustained state of gentle contraction which produces their tone in health, and consequently a general tremor of the affected muscles will quickly ensue."

The paralysis, according to Dr. Hollis and Dr. Heubel, is caused by weakening or destruction of nervous force. M. Potain, on the other hand, says that it is due to muscular obliteration and atrophy caused by derangement in the vascular supply. In this way, by disturbance of the interosseous arteries, he accounts for the paralysis of the extensors alone.

It is often important to distinguish paralysis caused by lead from rheumatic and traumatic paralysis. This can be done if we remember that in the two latter forms the supinators are affected, and in lead poisoning the extensors only. Moreover, the power of muscular faradization is lost in lead paralysis, while this is not the case in rheumatic palsy, but is in that of traumatic origin. There is anæsthesia in traumatic cases, and none in those arising from lead and rheumatism. Bernhardt, in *Virchow's Archiv*, states that this is not enough for a differential diagnosis in many instances without a close examination in other ways.

The question of absorption of lead leads us in the first place to inquire into the possibility of the volatility of lead salts at ordinary temperatures. Mead, in his work on poison, in 1708, had observed that

the melting of lead which had by exposure become coated with lead salts was much more dangerous than the melting of the fresh metal. Orfila, Christison, Tanquerel, Taylor, Tardieu, Reese, and others remark that lead compounds are spontaneously taken up by contact with any volatile substance, and they give cases of poisoning from the supposed inhalation of lead vapors. Dr. Lewis, in some very emphatic articles in the *Medical Times and Gazette*, speaks often of vapor mixed with lead, especially in that part of the making where the buckles are unpacked.

Not long ago a case was reported at the Medical School in which, I think, seven grains of lead were said to have been found in the urine of a man who had been taken sick after sleeping in a newly painted room. I did not believe that any salt of lead could be volatile at ordinary temperatures, and, to satisfy myself, tried the following experiments: A current of air was caused to pass through common white-lead paint; thence, after suitable precautions, it was conducted directly through distilled water. As the air bubbled through the delivery tube a strong odor could be perceived, resembling paint. The water, after several hours, was tested with a current of sulphureted hydrogen. There was no precipitate. Next, the current from the paint was passed through dilute sulphuric acid, water without any precipitate being formed; and lastly, through sulphate of soda in solution. Had there been any volatile compound of lead, or had there been any lead mechanically suspended in the current, it would have been detected by one or all of these experiments.

Elimination, according to some authors, is very rapid and complete. Others say that lead remains in the body for years. The fact that a dose of potassium iodide, given to a person who has been for months free from the ingestion of fresh poison, will produce symptoms of saturnine intoxication seems to support the theory that it is stored up in the body. According to M. Potain it is eliminated slightly or not at all by the kidneys, very slightly by sweat, and not at all by the saliva. He does not explain the source of the lead to form the blue line. M. Potain says it is eliminated naturally as albuminate of lead. That the whole skin assists in its elimination is shown by the blackening of all parts of the body in sulphur baths.[1] The bulk of authority goes to show that once deposited it is very slowly eliminated.

In the treatment of chronic lead poisoning the first thing to do is to prevent the ingestion of more lead. Then we should at once send away all the workmen from the mills, — an impossible thing to do.

Cleanliness is absolutely necessary. The hands should be frequently and thoroughly washed, the mouth should be rinsed often, and the lips and face kept clean, especially before eating and drinking. When

[1] It has been found in both urine and milk.

particles of dust fill the air, sponges moistened with water should be placed over the mouth and nose. The rooms of the mills should be large, well ventilated, and clean, being dampened and swept every day. The mill clothes should never be worn home.

The hands of the men are apt to shrivel and crack. The cracks though raw are insensible to pain from the local anæsthetic action of the lead. In the long run lead will penetrate quite deeply into the skin, and be more or less completely absorbed. To remove this the following method is in use in the mills of France: —

A bath of ten litres of water is prepared, in which four hundred grammes of common salt and eight hundred of sodic carbonate are mixed, hypochlorite of soda being formed. In this the men are obliged to scrub themselves once each day. They come out quite bleached.

As an antidote, sulphuric acid should be taken as a beverage, and frequent purging with salts of magnesia should be resorted to.

A remarkable case is given in the *Journal de Médecine* of the effect of the habitual use of milk in white-lead works. It will be remembered that in the case given above it was mentioned that as long as a great deal of milk was taken no serious effects were noticed from lead. In the French mills it was observed that in a large working population two men who drank much milk daily were not affected by lead. On the general use of milk throughout the works the colic vanished entirely. Each operative was given enough extra pay to buy a quart of milk a day. From 1868 to 1871 no cases of colic had occurred.

To remove lead from the system seems to require the use of potassium iodide. But if we add potassium iodide to a solution of plumbic acetate or of any soluble lead salt outside the body, we have an insoluble yellow precipitate. What, then, is the action in the system? According to Sir Henry Thompson a double iodide of lead and potassium is formed, which is soluble. At all events an increased excretion follows doses of from five to ten grains three times a day.

If, then, this is the action of potassium iodide we should expect the production in a more marked manner of the symptoms of lead poisoning. Such is the case. By increasing the dose of the iodide the patient can be brought to plumbism. This fact would go to show that lead is not rapidly and completely eliminated. A mixture of equal parts of honey and sulphur in fifty-gramme doses is recommended by English and French authorities.

Prognosis. This would be favorable in all these professional cases could the workmen be removed from the mills. They obstinately refuse to make the slightest effort to avoid danger. Mouth sponges are constantly on hand. Sulphuric acid lemonade is continually urged upon them. Fine bath rooms, fitted up nine years since by the Salem company, have been turned into store-rooms for want of patronage.

RECENT PROGRESS IN THE TREATMENT OF DISEASES OF THE THROAT.

BY F. I. KNIGHT, M. D.

Lupus of the Larynx. — Dr. Grossmann [1] demonstrated a case of this rare affection of the larynx to the Gesellschaft der Aerzte at its meeting on May 11th. The patient had been shown once before by Professor Neumann on account of primary lupus conjunctivæ. In the epiglottis there was cordiform loss of substance, as in Türck's cases. The neoplasm was visible on both vocal cords and on the left ventricular band. The function of the vocal cords, however, was not affected in either respiration or phonation.

Türck [2] has reported four cases of lupus of the larynx, about the diagnosis of which he thought there was no doubt, and one case with regard to which there was doubt. Ziemssen also has reported one case. Five of the preceding six cases occurred in the female sex, and were all in children (from nine to fifteen years of age). The man was forty-five years old. Neither the age nor sex of Dr. Grossmann's patient is given in the report, which is not so much to be regretted as the absence of any exact description of appearances.

Tuberculosis of the Pharynx. — Dr. B. Fränkel [3] has observed six cases of tuberculosis of the pharynx. They occurred especially in youth or manhood. Ulcerations with loss of substance were found on the posterior wall of the pharynx, on the soft palate, uvula, and base of the tongue. Neither the occupation, place of residence, nor mode of life was such as to render the throat of these patients especially liable to irritation. They had never suffered from chronic disease of the pharynx, and there was no enlargement of the tonsils. Fränkel found disease of the apices of the lungs in all these cases, but several of the patients had referred their first sensations of trouble to the throat. The tubercular eruption in the throat was, at all events, not a late manifestation, Fränkel having found extensive tubercular ulceration in the throat, with only catarrhal signs at the apex of the lung. On autopsy, also, the changes in the pharynx were found to be so great that this must be considered one of the first seats of deposit of the gray granulations. In all cases in which an autopsy was made, there was general or at least very extensive miliary tuberculosis. The ulcers in the pharynx itself had a markedly tubercular character; they were genuine lenticular ulcerations. The ulcerations, which extended superficially rather than deeply, had a caseous or lardaceous ground; occasionally it was granular in spots. The edges of the ulcers were irregu-

[1] Allg. Wien. med. Zeit., No. 20, p. 182. 1877.
[2] Klinik für Kehlkopfkrankheiten.
[3] Berl. klin. Woch., No. 46. 1876. Monatschrift für Ohrenheilkunde, etc., No. 1. 1877.

lar, fatty, caseous, or surrounded by a narrow inflammatory border. A few gray, mostly submiliary granulations were found in the neighborhood of the ulcers. Where these were thickest and ran together there appeared to the naked eye a gray, so-called lardaceous infiltration, over which the upper layers of epithelium were stretched unaltered. On microscopic examination in one case Fränkel found a true isolated granulation, which contained giant cells, thus removing the last doubt concerning its nature.

Among the subjective symptoms the extraordinary pain of these ulcerations is to be especially noticed, which occurred not only during deglutition, but also spontaneously, and was variously described as pressing, stinging, or scraping. The patients dreaded to swallow, and avoided it as much as possible. Deglutition itself was difficult, and the microscope showed cellular infiltration between the layers of muscles, and cloudy swelling of the same. Solid food could be swallowed scarcely at all, and liquids frequently regurgitated through the mouth or nose. The ulcerations began mostly on the sides of the pharynx, and extended to the arches of the palate, the posterior wall of the pharynx, and velum palati. They seemed usually to incline to extension in a transverse rather than in a vertical direction, and not to invade the œsophagus; at least in those cases which came to autopsy the ulcerations stopped abruptly at the commencement of the œsophagus. On the other hand, they frequently invaded the tongue. The lips also were liable to attack. Finally, in all cases of tuberculosis of the pharynx as yet observed, the larynx also has been affected. In two of Fränkel's cases the larynx was free from disease when first observed; afterwards œdema of the epiglottis, which is seldom wanting, came on, and, with a diminution of the swelling, tuberculous ulceration of the same and of other parts of the larynx. In regard to diagnosis, Fränkel thinks the appearance of the ulceration by itself sufficiently characteristic to make it sure. Of course, no confirmatory means should be omitted in the examination. The course of the affection is usually rapid. In most of the cases a fatal termination from exhaustion was reached in from two to six months. Delirium sometimes appeared towards the end of life, to account for which in one case no material lesion could be found in the brain on autopsy, and which, therefore, was considered to be delirium from inanition. Treatment was chiefly limited to sustaining the patient; the topical use of astringents had no effect, but Isambert reports favorable results from daily brushing the ulcers with morphine and glycerine, a proceeding which might be indicated on account of the pain.

Dr. Secchi [1] also reports a case of miliary tuberculosis of the pharynx. A merchant, forty-two years old, from Silesia, consulted Dr. Secchi at San Remo, in December, 1876. He stated that he had no hereditary

[1] Berl. klin. Woch., No. 26. 1877.

tendency to consumption. In the summer of 1876 he had an ulcer near the junction of the hard and soft palates, on the left side, which, in spite of every local and constitutional treatment, would not heal. Gradually cough set in, but the patient attached little importance to this. Profuse expectoration, fever, night-sweats, emaciation, and general debility followed, and the patient was sent South as a last resort. On examination, December 19th, Dr. Secchi found the following condition: Much emaciation; skin dry and very hot; complexion pale, almost dirty yellow; pulse 112; almost complete aphonia. The patient complained principally of severe, stinging pain in the throat, which shot up to the ears and rendered deglutition so painful that solid food was taken with great difficulty, and fluids even regurgitated easily. There was constant expectoration of tough mucus, which was sometimes purulent. On examination it was found that the right side of the palate was perfectly free from disease, but on the left there was a large superficial ulcer, which extended from about the middle of the hard palate to the arch, being about two and a half centimetres long and one centimetre broad, with irregular edges and a dirty yellow, fatty base. A second ulcer on the mucous membrane of the cheek extended from near the former to the first molar tooth. There was a third ulcer on the left side of the tongue. In the neighborhood of the first ulcer, little yellow knots of the size of a pin's head could be seen partially ulcerated. Similar little knots and lenticular ulcerations, of small size, were seen on the epiglottis, which was œdematous, and, in the extremely irritable condition of the patient, did not permit a thorough examination of the larynx. The lymphatic glands on the sides of the throat and under the lower jaw were much swollen. In the chest there was dullness on the left in front as far as the third rib; on the right as far as the second rib; behind, bronchial respiration in both supra-spinous fossæ, in the left especially sharp, with "klinging" râles on cough. Deglutition became more and more painful, and on December 31st numerous miliary gray granulations were discovered on the right half of the palate, some of which had already broken down into little round, yellowish ulcers. The disease now advanced rapidly. A superficial ulcer, with lardaceous base, was formed on the right side, as it had been on the left, and soon extended to the arches of the palate and the tonsils, whilst the first ulceration also extended farther backwards. Signs of a cavity appeared in the left lung, and the patient died January 27, 1877. Unfortunately, an autopsy was not allowed. It was difficult to say whether the disease began in the throat or in the lungs, but the patient first complained of the throat. The treatment by Dr. Secchi consisted merely of the local application of morphia to the throat, and cleansing the pharynx by a gargle of a weak solution of thyme oil, which also facilitated the throwing off of the thick, tough secretion.

On the Syndesmology of the Larynx, with Some Remarks on the Diagnosis and Treatment of Paralysis of the Glottis Openings. — Dr. Max Bresgen [1] found in the larynx of a patient, whose history he could not obtain, a white band about two millimetres broad, running, on either side, from the arytenoid cartilage, over the pharyngeal surface of the musculus transversus, to the posterior surface of the cricoid, exactly in the line of insertion of the posterior crico-arytenoid muscle. This ligament was about four millimetres shorter on the right side than on the left, being measured from its upper insertion to the upper edge of the cricoid cartilage. Consequently the right arytenoid cartilage was bent over far backwards, and the ligament was tightly stretched. This latter sent a little segment to the cartilage of Santorini. On the left side the ligament went only as far as the articulation of the arytenoid cartilage with the cartilage of Santorini. The motility of the left arytenoid cartilage was comparatively little affected, but that of the right was lessened. By this condition the respiration and especially the inspiration might have been considerably obstructed in life, and indeed the right cartilage of Santorini could have moved but little, so that if one had examined with the laryngoscope the question of paralysis would have arisen for consideration. Dr. Bresgen thinks, if other such cases should be found, that not only would one be justified, but that it would be his duty, in case of impeded action of the glottis-opener, after paralysis from primary destruction of the nerves and muscles has been excluded, to think of the possible existence of such a mechanical impediment as existed in the above case. In such case the motility of the cord would be restored after simple section of the abnormal bands. Dr. Bresgen thinks it probable that these bands arise from the aggregation of tendinous fibres in the fascia of the musculus transversus. One thinks also of the possibility of this being an anomaly of the ligamentum jugule (Luschka), which connects the two cartilages of Santorini with the upper edge of the cricoid cartilage between the arytenoids.

(To be concluded.)

PROCEEDINGS OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

A. L. MASON, M. D., SECRETARY.

MAY 26, 1877. Sixty-six members were present. The president, DR. C. D. HOMANS, in the chair.

Umbilical Hæmorrhage. — DR. ROTCH reported the following case: —

"On the first of March, 1877, I delivered of a male child Mrs. M., a Russian Pole, nineteen years of age, always strong and well, and already hav-

[1] Virchow's Archiv, lxvii., 1, p. 71. Monatschrift für Ornenheilkunde, etc. No. 10. 1876.

ing had one healthy child now living and eighteen months old. Mrs. M. has never had any miscarriages, and states that her parents were healthy; her husband appears to be a strong man, also a Russian Pole, and states that he has always been well, and that his parents were healthy. The labor was a normal one, the child presenting in the first position, and nothing unusual was noticed, excepting that the placental end of the cord continued to bleed quite freely, notwithstanding the application of two ligatures. On the day after both mother and child were doing well; the latter, though looking a little jaundiced, was reported to be nursing well, and the former had plenty of breast-milk. Fourteen days from this time I again saw the child, when the following history was given to me: The mother had always noticed a little bleeding around the insertion of the cord; the cord fell off on the eighth day; since then there had been a slight oozing of blood from the umbilicus; on the previous night the hæmorrhage had become so excessive that the parents were alarmed and sent for me. The child was found to be decidedly jaundiced, though not deeply so; it was nursing well, but looked thin and puny. Percussion and auscultation revealed nothing abnormal in the thoracic or abdominal cavities. Pale, watery-looking blood was oozing from the umbilicus, and quite a large cloth was shown to me, giving evidence of considerable hæmorrhage. The umbilicus was plugged with small pieces of lint soaked in the perchloride of iron, firmly compressed by a bandage, and alternate drop doses of the fluid extract of ergot and the tr. ferri chlor. were ordered to be given three times daily.

"On the following day, March 15th, the hæmorrhage had somewhat abated, but it was not thought advisable to remove the bandage; the ergot was stopped on account of nausea.

"March 16th. The child had been vomiting and crying a great deal, and the plugs of lint had been forced out of the umbilicus, leaving a bleeding surface; the umbilicus was again tamponed with Monsel's solution of the subsulphate of iron, and the tr. ferri chlor. was omitted, as it caused vomiting. The child's lip was pricked by a pin the day before and has since bled continually; bleeding point cauterized with stick of nitrate of silver.

"March 19th. The blood from the umbilicus has ceased to flow from under the bandage; that from the lip was arrested by the caustic for two hours, but then returned and has since continued; nitrate of silver again applied to lip. Child nurses well.

"March 24th. Hæmorrhage from lip continued after application of caustic for another day and then stopped.

"March 29th. Bandage and lint removed and abdomen washed; no bleeding; child looks better and is not so yellow.

"April 20th. Child reported to be perfectly well.

"April 28th. I was present at the child's circumcision, which was done without accident, the hæmorrhage being immediately arrested by a weak solution of iron.

"April 30th. No bleeding, child doing well.

"I saw the child for the last time May 10th, when, although still weak and puny, it was doing pretty well, and all signs of jaundice had disappeared. A small umbilical hernia existed.

"*Summary.* A child born of healthy parents has bleeding from the umbilicus, with jaundice, for twenty-two days, and bleeding from the lip (with the exception of two hours) for five days.

"The hæmorrhage appeared to be entirely uncontrolled by styptics, and but very slightly so by pressure.

"The recovery of the child cannot be attributed to any medicine, as none was given excepting for two days, when it was immediately vomited."

Dr. Lyman inquired whether the bleeding was from the umbilical vessels or from the raw surface around them.

Dr. Rotch replied that it was from the centre of the umbilical depression. The discharges from the bowels were normal.

Ovariotomy. — Dr. Lyman showed an ovarian cyst lately removed. The case will be published in full.

Epithelioma. — Dr. C. B. Porter exhibited an eyeball and eyelids removed for epithelial disease of ten years' duration. It started in the lower eyelid, and had grown very fast in the last year, invading the eyeball. On laying bare the eye it was found that the sclera and cornea were involved. Enucleation was performed. The position of the upper lid on the diseased surface below appeared as if it might have caused transplantation of the affection to that lid also.

Dr. Ellis said, in regard to the possibility of the disease being ingrafted upon the upper lid from the parts below, that it was well to consider that it might have occurred there in its natural course.

Dr. Porter replied that he offered the suggestion only as giving a possible cause for the appearance, since the nodule was surrounded by healthy tissue.

Glandular Tumors. — Dr. Porter showed also a number of glandular tumors of varying size up to that of a duck's egg. Three years ago he had removed similar tumors, five ounces in weight, from the carotid and submaxillary regions of the same patient, but they had reappeared in the lower part of the neck. At the second operation the glands were carefully dissected from the sheaths with little hæmorrhage. The operation took two hours. Antiseptic dressing was used, and in ten days the patient was about the wards. The temperature rose one degree when the carbolic dressing was omitted. The recovery was perfect.

Excision of Jaw. — A patient whose upper jaw had been excised two weeks before by Dr. Porter was brought in for the inspection of the members. A tumor starting from the alveolar arch had extended through the antrum and into the mouth. Laryngotomy was first performed and the pharynx packed with sponges. The jaw was removed in the usual way. The superior maxilla was found to be nearly absorbed. On examination by Dr. Fitz the disease proved to be epithelial cancer, which had gradually grown upward, involving the orbital plate.

The operation for laryngotomy turned out more serious than the excision of the jaw, since emphysema resulted which lasted for several days. The jaw was removed to relieve pain, as the patient had been obliged to take a great deal of opium, and said that he would prefer to die on the table rather than suffer as he had. The result in that respect was very satisfactory, as he had had little or no pain since.

The Abuse of Medical Institutions. — Dr. A. P. Richardson read a paper on Medical Institutions, in which he stated that the original purpose of hospitals had been perverted by the custom of treating gratuitously all who apply, whether they can afford to pay for services or not, thus diverting the legitimate profits of the ordinary practitioners. The reader thought that the public good did not require private, special dispensaries, and regarded these and the out-patient departments of the hospitals as stepping-stones for the few who were made by their appointments to appear superior to others.

Dr. S. L. Abbot said that, although there was truth in the paper just read, the question was difficult to solve, and that the trustees of the Massachusetts General Hospital had recently been trying a plan by which no injustice should be done; that during ten years when he was out-patient physician most of the patients could not pay for continued medical attendance. When they could pay they were called upon to do so. Under the present plan at the hospital every patient is expected to pay a small fee at the first visit. Should he appear subsequently, he is notified that the hospital relief is intended for the poor only, and that he must seek advice elsewhere. Those who say they cannot pay are visited by an attendant who inquires into their circumstances. As far as possible every one who can pay is excluded.

Dr. F. A. Harris knew of many instances where patients who were well able to pay were allowed to go to the hospital. Apart from the necessity for clinical material there should be a limit to charitable practice. During the past year one hundred thousand cases had been treated gratuitously in Boston. After an experience of one year in dispensary practice, Dr. Harris had concluded that each case could pay one dollar. He said that the old-fashioned prejudice against hospitals no longer existed, and that the abuse which now prevails had pushed many of the younger members of the profession very hard.

Dr. Richardson asked if any such system of visiting as that spoken of by Dr. Abbot could cope with the deception of the poor who wished to be deceitful. He thought that the trustees of a hospital had no right to treat those who came for twenty-five cents, unless they were intended to think that that was all the advice was worth. In Dr. Richardson's opinion the only remedy was to close the doors to out-patients.

Dr. Lyman, on investigating the subject several years ago, had thought that one fourth of the citizens of Boston received gratuitous medical advice. Great abuses had existed here and in Europe for many years, but hospitals and dispensaries were essential, and some method was desirable which would take care of the deserving poor only.

Dr. Harris thought that the system of charges in out-patient departments induced a certain number to go there who might have too much pride to go for nothing, and that those who could pay at all should be sent somewhere else.

Dr. C. C. Street related a case where a patient had been told at a hospital that the womb was injured in her last confinement when she was under his care. How it was known whether it was in that confinement or a previous one had not been stated. He had to sue for his bill, which was recovered. Dr. Street said that such statements should be made with great caution, and no

doubt often did harm unintentionally. The duty incumbent on the whole profession of resisting suits for damages brought upon trivial grounds was alluded to.

Dr. C. E. Wing read a paper on the Specialty of Diseases of Women, which has been printed.

Dr. J. B. Foley showed a specimen of epidermis exfoliated from the hands and feet during scarlet fever.

Dr. Fleming read a letter from Dr. W. H. French, describing the climate of the Ojai Valley in Southern California, which was published in the Journal of September 13th.

Dr. Bowditch said that this letter confirmed his impressions that the climate of the interior of Southern California was better than that of Santa Barbara. He also mentioned Thomasville, near Savannah, Georgia, as being high and salubrious, with an excellent hotel, conducted by a superintendent who understood the comfort of Northern invalids.

THE HAIR IN HEALTH AND DISEASE.[1]

This little volume, intended for both the profession and the public, has been prepared by the author in accordance with a plan originally contemplated by himself in association with the late Mr. Naylor, and a considerable portion of it is adopted from the last edition of the latter's work on Diseases of the Skin. We cannot altogether commend it, because to the physician it conveys nothing new and far less information upon the topics of which it treats than may be found in other books of a similar character and in most modern works on general dermatology, while to the public it fails to furnish all the practical instruction which they have a right to expect in such a treatise.

It describes briefly the anatomy and physiology of the hair, and treats of alopecia, canities, hirsuties, the vegetable and animal parasites of the hair, and of hair dyes. Under alopecia the author makes only a mere allusion to one of the most common causes and forms of the affection, alopecia furfuracea, or seborrhœa. The book abounds in whimsical notions: for example, alopecia areata, it is stated, is "connected with the presence of ascarides;" and partial baldness "frequently occurs in those who consume large quantities of food, and in both sexes is not seldom a consequence of hæmorrhoids and ascarides." Early canities is said to be due in some degree to free perspiration of the head. The spontaneous generation of lice is discussed as if it were "a point on which there exists a difference of opinion." The book is not wanting in errors, moreover. The crusts of favus, for instance, are said to lose after a time their distinctive fungoid character, while the common origin of parasitic sycosis and tinea tonsurans is denied.

The best portion of the book is the therapeutical part, which is on the whole very good. J. C. W.

[1] *The Hair in Health and Disease.* By E. Wyndham Cottle, F. R. C. S. Eng., Senior Assistant Surgeon to the Hospital for Diseases of the Skin, Blackfriars. Philadelphia: Lindsay and Blakiston. 1877. Pp. 147.

THE METRIC SYSTEM IN THE SCHOOLS.

THE Boston school committee has, we fear, disappointed the friends of the metric system by voting that it be taught as a separate branch instead of adopting it as the medium of expression. The great difficulty in the way of its adoption is that many even of those who understand it look on it as strange and unfamiliar. They can translate, so to speak, the usual weights and measures into their metric equivalents, but they do not think in metres, and it is essential that they should do so. It was all very simple in Prussia to hang up metres and litres in prominent places, and to announce that after a certain date sales and bargains made according to other systems should not be valid; that is a measure that a free country will not submit to. The only chance the metric system has of adoption is by becoming the most familiar, as it is the most convenient one. When this is once brought about, legislation will be superfluous; the system will introduce itself; and till this is done no amount of forcing can bring it into general acceptance. This can be done only by the schools. It certainly is a gain to have it introduced even as a study; this will tend to remove prejudices, and in a few years the school committee may see the wisdom of adopting it as a basis.

THE WOODRUFF SCIENTIFIC EXPEDITION.

THIS excursion, which we believe is about to sail, is certainly a remarkable one. Its object is science, and it will visit several countries but little known; still it is not, strictly speaking, a voyage of discovery. It is rather an educational undertaking than anything else. It is a traveling, scientific school that claims the world as its museum. Many a specimen that will serve as a "subject" for object-teaching is now playing in the deep, unconscious of its doom. We shall be surprised, indeed, if some important addition is not made to our knowledge of animal and vegetable life. This, however, is not the purpose of the expedition; it is to give the young men who take part in it an opportunity for instruction which they will better improve by faithful study and observation of known facts than by searching for new ones. Really original work had better be left to the teachers.

The trip is to last two years, and the route seems to us a well chosen one. The faculty contains men of reputation, and we understand that measures have been taken to furnish amusement as well as instruction during the voyage. Arms and amunition are taken for hunting and defense, and should the latter be necessary there is a military officer to command. The expedition has, moreover, received a semi-official recognition by the government that will insure it attentions from foreign countries. The scheme is a novel and comprehensive one; it must, of course, as yet be regarded as an experiment, and no one can foretell what internal or external difficulties it may meet, but what ever they may be it is to be expected that the energy of those who have started the plan will be sufficient to cope with them.

THE PRESS AND THE PROFESSION.

The death of Mr. Davenport, the celebrated actor, has led to one of those offenses against decency of which the press furnishes too many instances. *The New York Spirit of the Times* appears to have given out that Mr. Davenport's death was due to "acid pills," given by a Boston quack. Dr. Henry A. Martin, who had charge of the patient during a part of the summer, published a letter in the *Boston Post* of September 20th, stating that he had given salicylic acid and denouncing the statement of the *Spirit* with well-deserved severity. Whether or not this was worth while is a matter of opinion; but it is certainly natural for any one unjustly and coarsely assailed to desire redress. It has been suggested that it is our duty to protest against offenses of this nature, but there is, in fact, very little to say. If journals of a certain nature can increase their sale by such courses, there is no doubt they will follow them while they can do so with impunity. The only remedy is to be obtained by law, and is proverbially tardy, expensive, and often unsatisfactory.

There is, we think, a great deal published in daily papers concerning the relations of physician and patient, especially if the latter is at all distinguished that had better be left alone. Doctors are frequently credited with opinions they never expressed, to the injury of their reputation. The whole subject of the state of a sick man is of too private a nature to be properly discussed in public, either during his illness or after his recovery or death. We fear, however, that the papers are not the only nor often the chief offenders in this matter. There are, we fear, physicians who are by no means averse to this form of notoriety, and those who court it are far more to blame than the journalist who takes whatever he thinks to the advantage of his paper. Such physicians are in our opinion lowering the dignity of the profession, and opening the door to such abuses as the one mentioned above.

MEDICAL NOTES.

— We understand that the committee on the Warren Triennial Prize, the physicians and surgeons of the Massachusetts General Hospital, at a meeting held September 27th, awarded the prize to an essay entitled On the Healing of Arteries after Ligation. The author of the successful essay is Dr. E. O. Shakespeare, of Philadelphia.

This is one of the largest prizes in the country, the sum for this year falling but little short of four hundred dollars, and was offered to the writer of a successful essay embodying original researches in physiology, surgery, or pathological anatomy. The number of competitors was exceedingly large, and several of the essays reflected great credit upon the industry and ability of the writers.

— On Thursday, September 13th, the Essex North District Medical Society, together with the members of the New Hampshire and many of the prominent men of the Massachusetts medical societies went down Boston harbor on an excursion to Nantasket. The "exercises" consisted of a dinner and speeches. The latter do not appear to have been labored oratorical produc-

tions, but light, amusing, and sensible. Drs. Cotting and Coggswell, presidents of the society of this State, were among the speakers. The trip was very successful, and we hope will encourage other societies to follow so good an example.

— The Grindelwald glacier, says the *British Medical Journal*, is being used as a domestic supply of ice. Sixty men are daily employed in quarrying the glacier, cutting out blocks of ice one hundred and fifty pounds in weight. A tramway takes the ice to Interlaken, the descending trucks drawing up the returning empty ones. The ice is used not only in Switzerland, but is also sent abroad, a cargo having lately been supplied to the Bulgarian hospitals.

— We learn from *The Medical Press and Circular* that, "as an illustration of what curious superstitions still lurk amongst rural populations, the *Students' Journal* mentions that at Rivesaltes, in the south of France, some terrible cases of hydrophobia have recently occurred. The local authorities, therefore, determined to adopt preventive measures, and accordingly sent for some *salondadons*, or, as we should say, *seventh sons*, who in those districts are believed to have the miraculous power of curing the bites inflicted by mad dogs, and of blessing small pieces of bread called *passagnats*, which are supposed to ward off hydrophobia. The *salondadon* performs his cures by means of a crucifix, uttering the while various sacramental words from a liturgy peculiar to himself. The seventh sons are supposed to have a variety of other powers not granted to ordinary mortals, such as treading under foot or applying to the tongue a bar of red-hot iron without receiving any injury."

— Under the name of "oenokrine," says *The Medical Record*, a new test-paper, which, it is stated, will at once detect the presence of any artificial coloring matter in wine, has recently been introduced into notice in Paris. When the paper is dipped into pure red wine it is immediately colored grayish-blue, and becomes lead colored on drying. On the other hand, when moistened with wine that has been artificially colored by fuchsine or other aniline substances, the test paper assumes a bright carmine-red color; when the wine has been colored by ammoniacal cochineal, the paper becomes pale violet; when by elderberries or mallow flowers, bright green; when by logwood, the color of the husks of pressed grapes; when by Brasil wood or scarlet grains, dirty yellow; when by indigo extract, deep blue. The method of testing is very simple: a strip of oenokrine paper is left for about five seconds in pure wine, and is then well shaken to remove the excess of fluid, and laid upon a sheet of white paper, which brings out the color more sharply. A second strip of the test paper is then moistened in the suspected wine and laid alongside the first, when any difference in the color of the two will at once become apparent. It is positively stated that even one hundred-thousandth of a part of fuchsine in the wine is sufficient to give the paper a light-violet color, while a large quantity brings out a bright carmine-red. Lainville and Roy, the discoverers of "oenokrine," assert that they have also discovered a method by which the fuchsine can be removed from the wine without injuring the latter.

— The forty-fifth annual meeting of the British Medical Association was held at Manchester, beginning on August 7th. In the morning the members

attended divine service at the cathedral, and listened to a sermon by the bishop of Manchester. In the afternoon, at the general meeting, addresses were delivered by the retiring president, Dr. De Bartolomé, and the newly elected president, Dr. Wilkinson, of Sheffield, where the meeting is to be held next year. The address on surgery was given by Spencer Wells. Sir William Jenner made the opening address at the meeting of the section of medicine. Dr. Priestly presided over the section of obstetrics, and Dr. Bucknill over the section of psychology. Among the subjects discussed at the surgical section were urethral surgery and various forms of dressings, the most novel of which was that shown by Mr. Waddy, of Gloucester, which consisted in the use of terebene and the formation of a scab. The report of the section on public medicine was exceedingly full, and showed the activity of the association in this department.

— We are indebted to one of our recent exchanges for the following abstract of experiments, performed by M. J. Guérin. He wished to determine whether the stools in typhoid fever had a poisonous action. He sought more especially to determine whether the dejections of typhoid-fever patients contained an infecting matter from the beginning: —

(1.) Subcutaneous injections of diarrhœic typhoid stools were made on twelve rabbits. Ten of the rabbits died in the course of the first four days, while one died a month after, and one recovered.

(2.) The heart's blood of a rabbit which had died on the third day after the injection of the typhoid stool was inoculated in another rabbit. This rabbit died on the next day. Injections of fæces which came from individuals suffering from other diseases were without any results.

(3.) Fæces, intestinal blood, urine, detritus of swollen mesenteric glands, and constituents of intestinal ulcers which came from a typhoid-fever patient were inoculated on twelve rabbits. These all died at the latest thirty hours afterwards, with severe general symptoms. Three of them had diarrhœa. Post-mortem examination showed no characteristic changes.

(4.) Material which came from typhoid-fever patients (blood, urine, and fæces), and which had been kept four months, was inoculated on six rabbits. All these animals died without showing characteristic changes on dissection.

The conclusions which the author arrives at from his experiments are as follows: —

(1.) Typhoid stools immediately after being passed contain a poison which kills rabbits in a short time.

(2.) The blood and urine of typhoid-fever patients has the same quality, as does also the detritus of swollen mesenteric glands, and typhoid intestinal ulcers.

(3.) This property is not lost by keeping the material for months.

(4.) The fæces of healthy individuals or of those suffering from other diseases do not possess this property.

— As a remedy in migraine the juice of a lemon is squeezed into a cup of black coffee, which is then taken at once to alleviate the migraine in its course, or to arrest it at its commencement. Possibly the citric acid in this case acts by disengaging the caffeine, or by forming a salt with it.

BOSTON CITY HOSPITAL.

SURGICAL CASES OF DR. G. W. GAY.

Cystic Tumor of Cheek; Tetanus; Recovery. — Annie L., aged twenty-one years, entered the hospital May 14, 1877, with a tumor in her left cheek of a year's duration. It was the size of an English walnut, soft, ill-defined, not fluctuating, nor diminishing under pressure. Its mucous surface was bluish and lobulated. There was no enlargement of the lymphatics, and no pain. The tumor had been punctured at one time, but only a little blood came from it. The diagnosis was uncertain, as the growth presented some features which are found in cysts, myxomas, and erectile tumors.

The patient having been etherized an incision was made by the mouth into the tumor, showing it to be a cyst containing a thin, bloody fluid. A portion of the sac was excised and the interior lightly touched with nitric acid. Everything went on well, and the patient was discharged in ten days with the wound nearly healed and the sac obliterated. In less than a fortnight after leaving the hospital she began to notice a little difficulty in opening her mouth. The stiffness of the jaws gradually increased till June 25th, when she had three spasms in rapid succession, and was readmitted to the hospital. Her mouth was firmly closed. Sixty grains of chloral were given her in divided doses, and the next morning she could open her mouth three fourths of an inch. The pupils were widely dilated and the patient was very drowsy. Half a drachm of the bromide of potassium every three hours was then ordered in place of the chloral.

At the end of forty-eight hours she was worse, being scarcely able to separate the jaws. Chloral was added to the bromide of potassium in quantities sufficient to keep her drowsy, and was administered for ten days.

On being allowed to come out from under the influence of the drugs she had another spasm, the last one of her illness. Chloral was given at intervals in scruple doses for a week, when all medicines were discontinued.

The patient received from forty to one hundred and sixty grains of chloral daily, and toward the last she became very delirious at night. There was no failure of the heart's action at any time. The disease gradually wore away, and in forty days the patient left the hospital, free from pain, able to open her mouth an inch and to chew soft food.

Incised Wound through the Patella into the Knee-Joint; Recovery. — P. McG., aged thirty-two, was struck upon the right knee by a sharp, heavy axe, in consequence of the breaking of the handle in the hands of a fellow-workman. The man entered the hospital shortly after the accident, August 11, 1877. There was a gash upon his right leg five inches in length, parallel to its long axis, and extending completely through the patella into the cavity of the joint.

The hæmorrhage was moderate, only one ligature being required. The wound was closed with silk sutures, and a compress wet in the compound tincture benzoin applied. The leg was put upon a ham splint, and the joint surrounded with ice-bags. A one-grain opium pill every four hours, liquid diet, and absolute rest in bed were ordered.

The wound healed by first intention. Large effusion into the joint took

place, but it all subsided in two or three weeks. The patient's temperature never went above 99.5° and he had no pain of consequence from first to last. The bone is now firmly united; there is no effusion in the joint; motion is good, and the patient is beginning to move about the ward.

Gunshot Wound of Face. — James C., thirty years of age, was shot by a pistol on the evening of August 26, 1877. We saw the patient an hour or two after the injury was inflicted, and found a small wound on the bridge of the nose. A gentle use of the probe revealed a fracture of the nasal bones, and a sinus extending into the right orbit. The right eye was full of blood, was softer than usual, pushed completely out of the orbit, and resting upon the outer surface of the lower lid and face. The sight was of course destroyed. There was also great effusion in the upper lid.

The patient having been etherized the right eye was removed, and a small pistol-ball, more or less flattened, was found pretty firmly lodged in the spheno-maxillary fissure, at the outer and back part of the orbit. The globe of the eye was wounded on its posterior surface, and completely disorganized internally. Hæmorrhage was moderate.

No ill results followed the operation. The inflammation was not severe and soon subsided. The wounds in the nose and orbit healed readily, and the patient was discharged well in twelve days. At no time were there any symptoms of brain trouble.

CLIMATE OF MARTINIQUE.

The following letter is from the patient of a Boston physician, and is published by the permission of the latter. — Eds.

My Dear Doctor, — I did not write you from Santa Cruz, your Elysium, because I had heard so much in praise of this island that I wished to make my report on the climate of both at once. Though the climate of Santa Cruz is dry and equable, more so than that of any other place I ever was in, I cast my vote in favor of Martinique, as it is in a very flourishing condition, owing to a wise and stringent government, while Santa Cruz is much depressed, and offers no pleasure whatever to the patient except what he may find in his own resources. Good, plain living may be had at Santa Cruz, notwithstanding a general dearth of vegetables and fruits there which does not exist in this market. It is hardly fair to Santa Cruz to compare her with this island, because she is much smaller, and contains no high hills to furnish her valleys with water. The scenery in the interior of this island is said to be very fine, but it is rather inaccessible. However, I have been much pleased with my early morning rides along the shore and then up some valley or glen teeming with rich cane fields and wild tropical scenery in succession. At first I thought Martinique chilly and damp (or rather this town, owing to its being surrounded by hills), but I have now come to the conclusion that it was my fancy, caused by the running water with which the gutters are always supplied, and the fountains which are placed in every square, and with their splashing give the sound of falling rain. A peculiarity of the island is that a water-closet does not exist. Its place is supplied by an earthern jar in the form of a "tile" hat, which

stands in every dressing room, and is faithfully watched by the servant in charge. Early in the morning these servants congregate in the streets in front of their respective houses with these jars and clean them in the gutter. They seem to enjoy it, for it gives them a chance to gossip. The sight is more novel than the smell, though that is not very offensive, as the water runs swiftly down to the sea. The natural lay of the land is so favorable that this system of sewerage is probably as healthy as an underground system.

I also attribute the utter want of mosquitoes to these open water-courses. It is quite remarkable in such a warm climate not to find any vermin. Yet I have not been troubled anywhere with fleas, even. The mosquitoes are plenty everywhere except here, but all the hotels are provided with muslin bars to hang about the beds, which answer every purpose when they don't festoon them up during the day for ornament. I feel that the climate of the West Indies is just the thing that I have been looking for for two years. The thermometer does not vary here and in Santa Cruz more than ten degrees in the winter, and it usually stands at about eighty. Though the sun is very warm in the middle of the day, there is always a little breeze to keep you comfortable if you sit still in-doors. The night air is not as treacherous as that of Florida and other fashionable places of winter resorts for invalids, and frequently more than a linen sheet for a covering is oppressive. Of course we are enjoying all sorts of tropical fruits, but I have not found anything better than the orange and banana, which you are having as good at home as we are here. The sweetwater grape is plenty, as the vines bear three crops in the year.

These islands will never receive the attention they deserve from invalids until there is some established means of communication between them and the States. Since the discontinuance of the Garrison line to Brazil there is no direct line to St. Thomas. The cheapest and pleasantest route now to the latter port is from New York via Bermuda, though one may go via Havana, as I did. Santa Cruz is reached from St. Thomas by schooner in five hours, this place by steamer in two days. My plan is to get to Demerara from here and work north. I am feeling very well, though to-day the "Spanish fever" has got hold of me and I feel more like sleeping. In fact, among the islands one does not attempt to do much of anything but sleep, eat, and bathe.

E. B. R.

Saint Pierre, Martinique, *December* 24, 1876.

LETTER FROM ZÜRICH.

Messrs. Editors, — In a previous letter I promised to send you notes of special cases occurring in the clinic of Dr. Horner, professor of ophthalmology in the University of Zürich. Knowing them to be of chief interest to oculists, I do not wish to assume too much of your valuable space, which by right s the property of the general medical reader. The cases are selected with reference to rarity and to the ideas expressed in treatment.

Cases I. and II. *Ectopia Lentis.* — Two brothers, aged eight and nine

years, complain of bad eyesight. Inspection shows blepharospasm, while examination by focal illumination and the ophthalmoscope reveals in each of the four eyes a dislocation of the lens upwards. It is known that the mother and two of her sisters have binocular dislocation of the lens downwards; that five sisters — the whole number of children in her family being six — are like herself, myopic; it is further found in the hospital protocol that the mother of the six sisters had some form of ectopia lentis. Here, then, are three generations with the same deformity, but with dislocation in different directions. In the two boys the lens is so far dislocated upwards against and under the ciliary muscle that an imaginary plane coincident with the antero-posterior axis of the bulb represents the limits of disturbance of refraction; that is, that part of the bulb above the plane, in the section occupied by the lens, is myopic, while the part below the plane is hypermetropic: in the former instance the eye is like a camera with a lens of increased refractive power; in the latter there is a total absence of the refractive element, the lens being gone, and this part of the eye being like one from which a cataractous lens has been removed in aphakia, and hence hypermetropic. The question may be asked, What was the refraction of the lens before dislocation, supposing for the moment that the malposition was not congenital? It is fair to suppose from the age of the patients that all four eyes were emmetropic: because, first, in the four upper segments myopia is of a high grade (see statistics below); second, in the two lower segments of one lad hypermetropia approaches that of a normally refracted eye in aphakia, one fourth to one half; third, if a high grade of myopia had existed it would have been increased, if possible, in the upper segment, and would have counteracted by so much the hypermetropia of the lower segment of the eye deprived of its lens; fourth, if a high grade of hypermetropia had existed the result would have been exactly the reverse of the last hypothesis, namely, proportionate neutralization of the induced myopia in the upper and increase of hypermetropia, if possible, in the lower segment of the eye. For a small amount of either anomaly it is not necessary to make account. Further, it is clear that the lower segment would have been emmetropic had a sufficient degree of myopia preëxisted to neutralize the acquired hypermetropia. Another interesting point is that through such a pupil of from 1.5 to 2.5 mm. diameter the optic nerve, seen in the inverted image, is optically smaller at the edge of the lens in the upper segment than in the lower, where there is no crystalline lens.

It is a debatable question whether in dislocation of the lens the zonula Zinnii is ruptured, or whether it is merely dragged to one side; or is there, as is highly probable, a primary deficiency in its fibres? In the left eye of one boy a partial defect was plainly to be seen with the ophthalmoscope. In the other three eyes of the patients were holes, but they did not present the character of interruptions of tissue, as was observable in this one eye.

A stenopaic apparatus without any correcting glass assisted vision in the lower, or lensless, portion; none of the lenses were cataractous; had such been the case the opaque lens would have removed the circles of diffusion, thereby improving sight.

It was stated that ectopia lentis was properly only a change of place, as ec-

topia cordis, vesicæ, uteri, etc., while the term luxatio has come to imply a change of structure and relation in addition to a change of place.

The ætiology of this malformation has been found by Arlt and Stellwag to rest in the same category as that of coloboma of the iris and choroid, with which it is sometimes associated. I have seen in Arlt's clinic a case of unilateral coloboma of the lower lid, iris, choroid, and lens, without, however, any dislocation of the lens; also the original case of coloboma of the iris and choroid in Jaeger's atlas, also without unilateral dislocation; and further, two cases of dislocation of the lens, one upwards and inwards, the other downwards, without any accompanying coloboma, showing that the ectopia may exist by itself.

The ætiology is purely anatomical, namely, a congenital defect or an unequal development of the zonula Zinnii. The malformation is usually binocular and symmetrical; that is, if the lens is luxated upwards and outwards in one eye, it is usually luxated in the same directions in the fellow eye. The luxation is oftener upwards than downwards, a fact which may be influenced by the embryonic development of the palpebral slit. The literature concerning this anomaly is interesting but meagre.[1]

Case III. *Herpes Corneæ Serpiginosa Recurrens, in its Third Attack.* — The patient had had iritis, the iris having lost its lustre, and being of a dead blue color. It is stated that this form of herpes is rare except when induced by trauma. From the latter cause nursery-maids often suffer, receiving the injury from a needle, pin, or hook sticking into the eye. It is always accompanied by loss of epithelium and the anterior lamella of the cornea, as in trauma; the contour of the spot is irregular and jagged.

This herpes was rectangular, the apex being nearly in the centre of the cornea, with legs of angle projecting, the one upwards and inwards, the other upwards and outwards. The characteristic feature of this case was the almost complete regularity of the outer lines of contour of the projecting legs, while the inner lines looking towards the superior limbus corneæ were very irregular and jagged. It was a typical form of herpes recurrens, but is not recognized as such by all oculists. It may be readily confounded with lupus corneæ. Horner stated further that it not infrequently follows herpes labialis, and that it is always the result of pneumonia, febris intermittens, or typhus. He had never seen a case unaccompanied by intermittent fever in some form, nor coming at any other time of the year than in the spring or fall; this patient had had recent febris intermittens. Its recurrence may be traced to a mechanical cause, as the lodgment of dust particles or of bacteria upon a portion of cornea deprived of epithelium. Careful examination brought to view minute bladders or bullæ, such as one sees occupying the stroma of the iris in iritis serosa, and supposed to be filled with serum. These were aggregated together

[1] Arlt. Augenkrankheiten. 1856. Bd. ii., page 275.
Donders. Accommodation and Refraction. 1864. Page 555.
Mautheur. Lehrbuch d. Ophthalmoscopie. 1868. Page 150.
Wells. Diseases of the Eye. 1869. Page 285.
Tetzer. Compendium d. Augenheilk. 1874. Page 311.
Becker. Graefe-Saemisch. 1875. Bd. v., page 285.
Schweigger. Handb. d. Augenheilk. 1875. Page 393, et al.

in the depth of the herpetic tract. The repair is slow and tedious, and the treatment is largely of an antiseptic character; the indications are to keep out foreign bodies from the herpetic sulci by a firm compress-bandage, cleansing the corneal surface, conjunctival folds, and even the canaliculi by means of antiseptic solutions used with a syringe, and atropine, especially if, as here, iritis may recur. The bandage is to remain from twenty-four to thirty-six hours without removal, and is changed only for purposes of cleansing the parts. Horner always dips the bits of charpie in salicine before washing away the secretions. Hę makes the compress of bleached cotton-wadding, washed in salicine. This material is prepared at the International Bandage Factory of Schaffhausen, Switzerland, a little manufacturing town lying on the border of Würtemberg, and is known as "wound-dressing cotton." Horner uses the same material as stuffing for the ordinary cataract bandage. He regards such an ulcer from a surgical point of view, and mechanically scrapes it from the bottom with the spoon, as one would any necrosed part. This instrument is much smaller than, but of the same shape as, Hebra's spoon for scraping spots of lupus or acne, so much in vogue in Vienna. He then applies liquor chlori in saturated solution directly over the ulcer with a pencil or glass rod. In some cases the rapidity of control and of establishment of vascularization is wonderful. This procedure is only resorted to at the intervals of exchange of bandages.

Extraction of Cataract.— The cut usually adopted by Horner for removal of uncomplicated cataract is the one originally proposed by Graefe, directly on the sclero-corneal junction; if there be any divergence it lies in the cornea and never in the sclera. Schweigger, for thirteen years Graefe's assistant, and now his successor in Berlin, delivers the knife entirely from the sclera, the outer and inner points of the cut lying in an equator from 1.5 to 2 mm. behind the limbus corneæ. One rarely sees irido-cyclitis in Horner's clinic as a direct result of the operation. He never examines an eye which has been operated upon within the first twenty-four hours. Having extracted a cataract one morning he removes the bandage the following morning for the first time, when all danger of disturbing the conjunctival flap is over. He displaces the secretion with a bit of salicine cotton, and wipes the lids with a dry pledget of muslin. His idea is that water may excite spasm of the upper lid, thereby interfering with the quiet of the parts below. It may be an idiosyncrasy, but practically it works well. These minutiæ of personality are very different in different men. For instance, Arlt of Vienna, Pagenstecher of Wiesbaden, and Horner consult the comfort and whims of patients in after-treatment of cataract operations, while equally good operators, as Stellwag of Vienna, Wecker of Paris, and Schweigger, follow out a certain method with reference to the bandage, cleansing of wound, position of patient, etc., etc.

A word with regard to the conveniences at Zürich for eye-patients, and I will close this letter, already too long for a special subject. Two wards, one for each sex, with twenty-four beds, are devoted to the poorer classes in the canton hospital. No one is received from outside the canton except by special permission. The cost is trifling, and none are admitted free. Besides this, Professor Horner has a private hospital, by name Hottingerhof, where are

forty beds; he is in charge of sixty-four beds in all. This private hospital of four stories is the type of Swiss neatness. There are two buildings, both of which are furnished with gas and water, parquet floors, and electric bells. Each one has a reception-room, where the consultation with patients is daily held. The first story is above ground, and none of the misfortunes of bad drainage occur, on account of the elevated position of the land and the sandy soil. Although the institution is not public, and is not devoted to the education of the students at the university, physicians and specialists are always invited to follow the daily clinic. It is a model of a hospital home, and I question if the majority of Swiss, French, German, and English patients I saw there are able to furnish their houses in better taste or with a view to more comfort. I do not wonder at the high per cent. of cures succeeding operations as compared with similar institutions in some parts of Germany. Personal habits of the two nations play an important rôle in the facility of management of such an institution.

Yours truly, E. S. P.

ZURICH, *July* 31, 1877.

MESSRS. EDITORS, — A few weeks ago a young man came to my office with a dislocation backwards of the ulna and radius, the result of a fall in wrestling. In reducing it I adopted the method mentioned in a late number of a journal, and with a result so perfectly satisfactory that I am prompted to suggest the republication.

It being the right arm I clasped the patient's right hand with my left, with fingers interlocked, my elbow pressed into the angle of his arm and fore-arm, when upon flexing the arm the bones at once returned to place, and the man is now at his accustomed place in the shop.

S. I. SMALL, M. D.

SAGINAW, MICH., *September* 15, 1877.

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING SEPTEMBER 22, 1877.

	Estimated Population, July 1, 1877.	Total Mortality for the Week.	Annual Death-Rate per 1000 for the Week.	Death-Rate for the Year 1876.
New York	1,077,228	507	24.47	27.46
Philadelphia	850,856	256	15.65	22.88
Brooklyn	527,830	204	20.09	24.31
Chicago	420,000	129	15.95	20.41
Boston	363,940	153	21.86	23.39
Providence	103,000	40	20.19	18.34
Worcester	52,977	24	23.56	22.00
Lowell	53,678	24	23.25	22.21
Cambridge	51,572	19	19.16	20.54
Fall River	50,372	31	32.00	22.04
Lawrence	37,626	17	23.49	23.32
Lynn	34,524	16	24.09	21.37
Springfield	32,976	11	17.35	19.69
Salem	26,739	10	19.45	23.57

ERRATA. — Seventh line of second paragraph, page 340, "thirty-six grains" should read "eighty grains." Fifth line from bottom of page 359, "of a grain of bile" should read "of a grain of mercuric chloride."

A SPECIAL meeting of the Norfolk District Medical Society will be held in Bradley's Building, corner of Dudley and Warren streets, Roxbury, on Tuesday, October 9th, at eleven o'clock. The following papers will be read: —

Dr. Robert Amory. A Case of Malignant Pustule.

Dr. Orville S. Rogers. The Abuse of Medical Charity.

Dr. George D. Townshend. A Case of Amputation of the Hip-Joint.

Lunch at 1.45 P. M.

BOOKS AND PAMPHLETS RECEIVED. — Pathology and Treatment of Sprains. By Richard O. Cowling, A. M., M. D. Read before the Kentucky State Medical Society. 1877.

Public Health Reports and Papers. Vol. III. New York: Hurd and Houghton. 1877

The Ear: Its Anatomy, Physiology, and Diseases. By Charles H. Burnett, M. D. Philadelphia: Henry C. Lea. 1877.

Defects of Hearing and other Evils, the Result of Enlarged or Hypertrophied Tonsils. By W. A. Calhoun, M. D. (From Transactions of the Medical Association of Georgia.) Atlanta. 1877.

Forensic Medicine and Toxicology. By W. Bathurst Woodman, M. D., F. R. C. P., and Charles Meymott Tidy, M. B., F. C. S. Philadelphia: Lindsay and Blakiston. 1877. (From A. Williams & Co.)

Journal de Micrographie. No. 4. Août, 1877.

War Department. Surgeon General's Office. Circular Orders No. 3. August 20, 1877.

Transactions of the Medical Association of the State of Alabama. A State Board of Health. Thirtieth Session. 1877.

A Report on Lister's Antiseptic Wound-Treatment. By A. C. Girard, M. D., Captain and Assistant Surgeon United States Army. (From the War Department, Surgeon-General's Office.)

An Index of Diseases and their Treatment. By Thomas Hawkes Tanner, M. D., F. L. S. Second Edition. Revised by W. H. Broadbent, M. D. Philadelphia: Lindsay and Blakiston. 1877. (For sale by A. Williams & Co.)

Headaches: Their Causes and their Cure. By Henry G. Wright, M. D. Seventh Thousand. Philadelphia: Lindsay and Blakiston. 1877. (For sale by A. Williams & Co.)

The Hair in Health and Disease. By E. Wyndham Cottle, M. A. Oxon., F. R. C. S. Eng. Philadelphia: Lindsay and Blakiston. (For sale by A. Williams & Co.)

Transactions of the Kentucky State Medical Society. April, 1877.

Case of Peripheral Necrosis of the Humerus. By J. Ewing Mears, M. D. (Extracted from the Transactions of the College of Physicians of Philadelphia. Third Series. Vol. III.)

History of Ovariotomy in Maine. Read before the Maine Medical Association June 13, 1877. By George E. Brickett, M. D., of Augusta.

On the Various Forms of Pruritus Cutaneus and their Treatment. By R. W. Taylor, M. D. (Reprinted from the Archives of Clinical Surgery.)

Retarded Dilatation of the Os Uteri in Labor. By Albert H. Smith, M. D. Philadelphia.

Infants' Food. Issued by Theodore Metcalf & Co., Boston.

Solid Food in Typhoid Fever. By S. D. Turney, M. D. (From the Ohio Medical and Surgical Journal.)

Transactions of the Medical Association of Georgia. 1877.